

WHAT IS CLAIMED IS:

1. A process comprising:
 - (a) contacting one or more protein containing materials with one or more wet-mill streams and one or more carbohydrases to produce at least one protein concentrate and at least one aqueous stream containing water-soluble carbohydrates; and
 - (b) separating the protein concentrate from the aqueous stream containing water-soluble carbohydrates.
2. A process according to claim 1, additionally comprising defatting the protein containing material.
3. A process according to claim 2, wherein defatting the protein-containing material comprises contacting the protein-containing material with a solvent.
4. A process according to claim 2, wherein defatting the protein-containing material comprises contacting the protein-containing material with an enzyme.
5. A process according to anyone of claims 1 to 4, wherein the grain is corn and the one or more protein containing materials comprises gluten.
6. A process according to anyone of claims 1 to 5, wherein said process is comprising a bleaching step.
7. A process according to anyone of claims 1 to 6, wherein at least one of the one or more wet-mill streams is steep liquor, light steep water, heavy steep liquor or mixtures thereof.
8. A process according to anyone of claims 1 to 7, wherein the aqueous stream containing water-soluble carbohydrates is recycled and used as one of the one or more wet-mill streams in step (a).
9. A process according to anyone of claims 1 to 8 wherein at least one of the one or more protein-containing materials is selected from the group consisting of light gluten fraction, heavy gluten fraction, corn gluten concentrate, corn gluten meal, gluten cake and mixture thereof.

10. A process according to anyone of claims 1 to 9 wherein step a) is taking place at a temperature of at least room temperature, preferably at least 50°C, more preferably at least 70°C, most preferably at least 120°C.
11. A process according to anyone of claims 1 to 10, wherein said process comprises a
5 membrane filtration step before and/or after step b) of said process.
12. A process according to anyone of claims 1 to 11, further comprising the step of drying the protein concentrate.
13. A process according to anyone of claims 1 to 12, wherein a least one of the one or
10 more carbohydrases is selected from the group consisting of alpha amylase, dextrinase, pullulanase, glucoamylase, hemicellulase, cellulase and mixtures thereof.
14. A process according to anyone of claims 1 to 13, further comprising contacting the one or more protein-containing materials, one or more wet-mill streams, and/or one or more carbohydrases with one or more enzymes to join protein fragments.
15. A process according to claim 14, wherein at least one of the one or more enzymes
15 are chosen from polyphenoloxidases and transglutaminases.
16. A process according to anyone of claims 1 to 15, further comprising contacting the one or more protein-containing materials , one or more wet-mill streams, and/or one or more carbohydrases with one or more pectinases.
17. A process according to anyone of claims 1 to 16, further comprising contacting the
20 one or more protein-containing materials with one or more phytases.
18. A process comprising contacting one or more protein containing materials with one or more wet-mill streams and one or more carbohydrases to produce at least one protein concentrate and at least one aqueous stream containing water-soluble carbohydrates, wherein greater than 2% of the solids in the protein-containing material are gluten.
- 25 19. A process for increasing recovery of proteins in one or more protein containing materials of grain wet milling process and characterized in that in said process the content of water-soluble carbohydrates is increased in at least one aqueous stream containing water-soluble carbohydrates.

20. A process according to anyone of claims 1 to 19 and said process is comprising the following steps:
- a. Taking a protein containing material obtainable after at least one separation step in the wet-milling process,
 - 5 b. Contacting an aqueous stream of said wet-milling process with the protein containing material,
 - c. Adding an effective amount of carbohydrase for converting starchy material in said protein containing material into water-soluble carbohydrates,
 - e. Separating in two streams, preferably a protein concentrate and an aqueous stream
10 enriched with water soluble carbohydrates.
21. A process according to anyone of claims 1 to 20, wherein the separation is carried out at a temperature greater than 45°C.
22. A composition comprising greater than 70% corn protein concentrate without exogenous saccharification enzyme amino acid sequences.
- 15 23. The composition according to claim 22 wherein the saccharification enzymes are derived from microorganisms.
24. The composition according to claim 22, wherein the saccharification enzymes are selected from the group consisting of glucoamylases, pullulanases, and mixtures thereof.
25. The composition according to claim 23, wherein the saccharification enzymes are
20 selected from the group consisting of amino acid sequence is fungal, bacterial, or mixtures thereof.
26. A method of making a protein concentrate comprising separating the protein concentrate from the carbohydrate containing stream at temperatures greater than 45°C.
27. The method according to claim 26, wherein microbial growth is substantially
25 inhibited.
28. A process according to anyone of claims 1 to 10, wherein said process comprises a filtration step to remove low protein content components before step b) of said process.

29. A process according to anyone of claims 1 to 12, wherein the carbohydrase is added in the form of malted grain.

30. A composition comprising greater than 70% corn protein concentrate and a carbohydrate profile wherein at least 10% of the water extractable carbohydrates DP 5-13
5 (total 5-13) as percent of DP 1-13 (total area 1-13).